

Attorney Docket No.: 01CON346P
Serial No.: 09/761,033

List of Claims:

Claims 1-27 (cancelled)

Claim 28 (previously presented): A method of encoding a speech signal, said method comprising:

processing said speech signal to generate a plurality of frames, wherein each of said plurality frames includes a plurality of subframes;

coding a previous subframe of said plurality of subframes using Code-Excited Linear Prediction to generate a previous excitation signal; and

applying short term enhancement using said previous excitation signal to enhance a current excitation signal for a current subframe;

wherein said current excitation signal is constructed using $P(n) = C \sum_i G_i \cdot \delta(n - T_i) + \delta(n)$, where G_i is a gain, T_i is a distance for an i th peak, and C is a coefficient, wherein T_i is smaller than pitch period.

Claim 29 (previously presented): The method of claim 28, wherein said short term enhancement is achieved by using several pulses from said previous excitation signal to generate one or more short term enhancement pulses based on short term correlation.

Claim 30 (cancelled)

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Claim 31 (previously presented): The method of claim 28, wherein said short term enhancement is achieved by weighting said previous excitation signal by a current weighting filter to estimate correlation peaks at a distance.

Claim 32 (previously presented): The method of claim 31, wherein said short term enhancement determines less than five peaks and gains per each sub-frame from said previous excitation signal.

Claim 33 (cancelled)

Claim 34 (previously presented): The method of claim 28, wherein gains and distances are calculated by maximizing correlations of previous excitation signals in a weighted speech domain.

Claim 35 (previously presented): The method of claim 28, wherein short term enhanced excitation is generated by performing a convolution operation of $P(n)$ with said excitation signal.

Claims 36-37 (cancelled)

Claim 38 (previously presented): An encoder for encoding a speech signal, said encoder comprising:

a speech processing circuitry configured to process said speech signal to generate a plurality of frames, wherein each of said plurality frames includes a plurality of subframes;

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a coding circuitry configured to code a previous subframe of said plurality of subframes using Code-Excited Linear Prediction to generate a previous excitation signal; and

a short term enhancement circuitry configured to apply short term enhancement using said previous excitation signal to enhance a current excitation signal for a current subframe;

wherein said current excitation signal is constructed using $P(n) = C \sum_i G_i \cdot \delta(n - T_i) + \delta(n)$, where G_i is a gain, T_i is a distance for an i th peak, and C is a coefficient, wherein T_i is smaller than pitch period.

Claim 39 (previously presented): The encoder of claim 38, wherein said short term enhancement is achieved by using several pulses from said previous excitation signal to generate one or more short term enhancement pulses based on short term correlation.

Claim 40 (cancelled)

Claim 41 (previously presented): The encoder of claim 38, wherein said short term enhancement is achieved by weighting said previous excitation signal by a current weighting filter to estimate correlation peaks at a distance.

Claim 42 (previously presented): The encoder of claim 41, wherein said short term enhancement determines less than five peaks and gains per each sub-frame from said previous excitation signal.

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Claim 43 (cancelled)

Claim 44 (previously presented): The encoder of claim 38, wherein gains and distances are calculated by maximizing correlations of previous excitation signals in a weighted speech domain.

Claim 45 (previously presented): The encoder of claim 38, wherein short term enhanced excitation signal is generated by performing a convolution operation of $P(n)$ with said excitation signal.

Claims 46-47 (cancelled)

Claim 48 (previously presented): The method of claim 28, wherein said current excitation signal is constructed using an excitation pattern that accounts for a long term correlation in which a true pitch lag is shorter than a subframe size, while detected pitch lag is substantially greater than the true pitch lag.

Claim 49 (previously presented): The encoder of claim 38, wherein said current excitation signal is constructed using an excitation pattern that accounts for a long term correlation in which a true pitch lag is shorter than a subframe size, while detected pitch lag is substantially greater than the true pitch lag.

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Claim 50 (currently amended): A method of encoding a speech signal, said method comprising:

processing said speech signal to generate a plurality of frames, wherein each of said plurality frames includes a plurality of subframes;

coding a previous subframe of said plurality of subframes using Code-Excited Linear Prediction to generate a previous excitation signal;

determining information of lag and gain from said previous subframe;

scaling said information to generate a scaled information of said previous subframe; and

applying said scaled information of said previous subframe to a current excitation signal for a current subframe to enhance data used to code said current excitation signal for said current subframe;

wherein said current excitation signal is constructed using

$$P(n) = C \sum_i G_i \cdot \delta(n - T_i) + \delta(n), \text{ where } G_i \text{ is a gain, } T_i \text{ is a distance for an } i\text{th peak, and } C \text{ is a}$$

coefficient, wherein T_i is smaller than pitch period.

Claim 51 (previously presented): The method of claim 50, wherein said applying adds said scaled information to said current excitation signal for said current subframe.

Claim 52 (previously presented): The method of claim 50, wherein said scaling generates said scaled information of said previous excitation signal for a previous peak in said previous subframe, and said applying uses said scaled information to determine a first approximation of said current excitation signal for a current peak in said current subframe.

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Claim 53 (previously presented): The method of claim 52, wherein said applying adds said scaled information to said current excitation signal for said current peak in said current subframe.

Claim 54 (cancelled)